DOCUMENT RESUME

ED 185 433 CG 014 242

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TITLE The Next Ten Years in Education.
PUB DATE Dec 79
NOTE 19p.: Paper presented at the Annual Conference of the World Future Society (2nd, Minneapolis, MN, October 18-21, 1979).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Education: Educational Attitudes; Educational Development; *Educational Trends; *Financial Support; *Futures (of Society); *Long Range Planning; Prediction; School Personnel; *Social Influences; State of the Art Reviews

ABSTRACT

A person's beliefs about the future are very powerful in shaping his or her actions. The issue of what image of the next 10 years is most appropriate for educators today can be examined metaphorically with differing visions of what education can become. By using a series of predictions and by consolidating forecasts from futures research, educators can image a set of likely developments in education's context over the next decade, including forecasts of economic, technological, demographic, cultural, and political change. Implications of these developments for educational equity and practice center on issues of educational finance, educational technology, disparity in educational settings, and retrenchment of traditional approaches to schooling. The responses educators can make to these forecasts of the future and the visions they evoke suggest that the 1980s may be a time of marked educational innovation, not for ideological reasons, but because of financial necessity. (Author/BMW)

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ED185433

Conference noted on release form. C.K. Jaslow

The Next Ten Years in Education

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December, 1979

CG 014242

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Last year, at the First Conference of the Education Section. World Future Society, I discussed how we might best conceptualize our role as educators concerned with the future. In particular, I spent some time developing a perspective on where we are in history and what long-term challenges and opportunities we face. (That talk is published in Educational Futures: Sourcebook I) This year, I will take a very different approach, building on that overview, and will set forward some forecasts on the nature of the immediate future, the next decade.

Making these predictions is a very risky thing for me to attempt professionally, because you will still be around at the end of the next 10 years to check the validity of my forecasts. By 1989, I will either be a futuristic hero or be selling hotdongs in Yankee Stadium to make a living! Nonetheless, I will take my chances on what the future brings, because I see so many incredibly short-sighted decisions being made today that I feel all of us must speak out on what we see coming.

Ultimately, a person's beliefs about the future are very powerful in shaping his actions. In a sense, what we strive to do as educators is to change students' lives by giving them visions of what their personal future might be and the knowledge they need to actualize these possibilities. One of the aspects of futures research that has always fascinated me is the extent to which one can change someone's behavior by altering the image of the future that he holds (I find this personally very useful in playing poker). If we are to be effective in building a positive future for education, we need to examine our own professional beliefs about the future and ensure that our images are appropriate. Here are four metaphors

from Draper Kauffman's Teaching the Future to use in reflecting on your conceptualizations of change. Which do you find best describes your day-to-day vision of the future of education?

The future can be seen as similar to a rollercoaster on a dark night. All of us are in a car on the rollercoaster, speeding along the rails. We know that we're on a fixed track which the car must follow, that our future is already determined, but we don't know where the track is going because everything is black as pitch. Now and then a flash of lighting comes and a bit of the track is exposed—we can see for just an instant what will happen next—but then it is dark again. This rollercoaster metaphor has been the dominant image of the future throughout history. In fact, one of the reasons the future did not begin to be researched until recently has simply been that for much of the past what would come was seen as pre-determined, God's will, unknowable. Many of the early futurists may have died at the stake, because to speculate about the predetermined future was considered to be heresy.

A second metaphor is that the future is similar to a mighty river winding through the countryside. We are in a boat on that river. There is a generally predetermined course—the river has definite banks and a strong current—but we have more freedom to steer than on the rollercoaster. We have to follow the river, but we can avoid sandbars and, if the river forks, we can choose which direction we are to take. Many of us think about the future of the public schools in this manner; the tide of events in formal education sweeps us along, but we can choose where to steer along the surface.

A third metaphor is that the future is similar to an ocean. We are in a ship, acting as the masters of our fate, the captains of our soul. We can

choose whatever future we will if we only work for it; though there may be storms and reefs, with care we can sail the ship to where we want to be. In the 1960's, many of us, for at least a brief time, felt this way about what we could accomplish in changing education.

Finally, one can conceptualize of the future as being similar to a dice game. At any instant, the dice are shaken, a number comes up, and this number represents a decision. Then the dice are tossed again, another number appears, and through such a random series of actions the future chaotically emerges. I am working in Washington this year in the Planning Office of the National Institute of Education; as I watch how the political system works, I see many people who can empathise with the metaphor of the future as a dice game.

None of these metaphors are intrinsically right or wrong; each describes a different aspect of the ways in which the future is determined. As educators concerned with change, we need to be aware of our assumptions about these different aspects on the future, so that we can respond appropriately by clinging to the boat, steering, or mapping courses to new lands. What I want to discuss in the next portion of this article is the part of the future similar to a river.

Likely Developments in Education's Context in the Next Decade

In the next 10 years, what are the likely constraints we face? The forecasts following are speculative; I cannot prove what I'm going to set forth. But since some assumptions about the future must be made, these are a reasonable set of predictions with which to begin.

Economics

The 1980s will be a time of major economic instability and uncertainty, as chaotic a period as has existed since the 1930s (Ed Cornish describes this in more detail in his article).

The first half of the decade will likely cycle among period of low growth with very high inflation, stagnation with high inflation, and recession with moderate inflation.

The second half of the decade will probably see:

either

massive capital investment, with emerging successes in technology and technocracy beginning to lay the foundations of new prosperity

or

the relative impotence of technology and technocracy to solve current crises, followed by fiscal collapse to a new type of economic catastrophe (about 14% unemployment coupled with about 20% inflation).

Technology

The availability of inexpensive, powerful miniature computers will cause a massive shift in occupational roles over the next 10 years. Since capital-intensive industries outperform labor-intensive industries during inflationary periods, rote tasks will gradually become automated (especially in areas—such as information processing—in which no manipulative functions are required). Occupational demand will center on skills of decision-making given incomplete information, flexibility, and creativity (all of which machines are not well adapted to do).

New developments in instructional technology will offer, for certain subjects, cost-effective alternatives to traditional teaching methods. Microcomputer and videodisk hardware will be readily affordable. Limited

availability of quality software will become the major restriction on use. Corporations will increasingly utilize these instructional systems to reduce industrial training costs; middle and upper income families will use these technologies for enrichment of personal time and to enhance their learning.

Demographics

The "baby bust" generation will pose sequential problems of enrollment decline for elementary, secondary, and college level education through the 1980s. However, an upturn in student population will begin in the lower elementary grades in the middle of the decade.

The increasing presence of women in the work force, as well as greater demands for occupational education, will create needs for extra-family supervision and socialization of children.

Many immigrants will settle in metropolitan areas, including significant numbers of non-English speaking students.

High rates of mobility will cause regional flux in student populations. The Southern, Southwestern, and Rocky Mountain portions of the country will experience net population in-migration from the remainder of the United States. Out-migration of middle and upper class families to suburbs and rural areas will continue (despite gentrification). Minority and lower income students will increasingly become concentrated in urban school districts.

The proportion of elderly persons in the population will continue to rise, placing stress on income redistribution programs (such as social security and Medicare).

Cultural Values and Beliefs

Social instability and change and a growing sense of lack of control will create difficulties in "coping" for many people. Planning, leadership, and self-renewal will become increasingly problematic for institutions, as responding to crises in the "here and now" consumes ever greater amounts of time and energy. (This process is described in depth in Markley's Stanford Research Institute report, Changing Images of Man.)

The technological and bureaucratic complexity of society will pose many problems for citizens. Reliance on the advice of "experts" for most choices will become increasingly necessary (yet simultaneously resented). Uniform socialization of the population to the multiple, higher order cognitive and affective skills required for participation on society will require major expenditures of resources, yet will be essential to the proper functioning of a high technology society.

Heightened values conflict will occur, as multiple special interest groups do battle on individual ethical issues such as abortion, individual rights and responsibilities, and biomedical manipulation. Perceived incapacities of technology and technocracy to deal with current crises will cause a major struggle between those who continue to espouse a narrowly rational, high technology-based, materialistic "American Dream" and those who proselytize for a shift to a more adaptive, ecological, spiritual lifestyle (as Jean Houston espouses in her article). One risk of this cultural "civil war" at a time of economic distress is the emergence of a charismatic dictator.

Governance

Financial pressures on citizens will intensify the existing "anti-taxes" movement, and business groups will attempt to link anti-regulatory arguments to this cause. The result will be a pervasive "reduce governance"

stance. Conflicting pressures will come from those who see a single strong hand as needed to lead America out of current crises (a "charismatic leader" approach). Representative democracy will thus be eroded by pressures both for localism and for unitary authority.

Public response to emerging resources crises (e.g., water) will continue to be directed toward programs for crash priority replenishment. These will tend to be oriented toward high technological sophistication rather than conservation measures involving lifestyle changes. Competition among Federal priorities will become extremely intense, to the relative detriment of long-range needs and issues.

Demands for accountability and evidence of competence will force conservative decision-making and the production of large amounts of documentation of performance. These tendencies will create further problems in institutional ability to respond to change.

Many other likely developments in the 1980s can be cited. This representative list has been selected because these forecasts have major implications for educational equity and practice. Ultimately, a rigorous approach to anticipating educational challenges of the next decade would involve extending these forecasts to create detailed alternative scenarios of society in the mid-1990s. From such an overall environmental context, the role education must play to create a positive future can be inferred. (One such project is already in progress under the joint sponsorship of the Education Section, World Future Society and Old Dominion University, directed by Dwight Allen and myself).

Illustrative Implications for Educational Equity and Practice

The developments cited above are based on fairly cautious and conservative assessments of probable societal changes in the next 10 years.

Nonetheless, their impact on educational equity and practice is likely to be quite large, in part because many of these trends will interact in a mutually reinforcing manner. The negative feedback loops in social systems resist change so strongly that even a very powerful isolated trend frequently is suppressed. As a result, futures forecasts which rely on naive extrapolation of isolated trends tend to have low validity. However, a great many reinforcing events which combine to affect basic parameters of the society can overwhelm this inertia and lead to a basic redefinition of the social system itself. The 1980s seem to be such a period in history. A large number of major quantitative changes may well perpetrated an overall qualitative change.

An extended example of reinforcing developments may help to illustrate this point: formal education will experience very severe financial strains in the next decade because of the simultaneous impact of a number of trends. First, we seem to be approaching the maximum percentage of their income that people are willing to spend for education (currently about 8 1/2-9% of GNP). Over time, the "piece of the pie" that we've been able to claim from people's incomes has crept up and up and up—but now clients are saying, "no more".

The reason that our share of the fiscal "pie" has continuously increased has not been because we've been particularly wasteful with money, but because education is labor-intensive rather than capital-intensive (that is, we use people to produce educational outcomes instead of using machines). Auto assembly plants and steel mills are examples of capital-intensive industries; medicine and government are labor-intensive industries. Over time, capital-intensive idustries cost consumers progressively less, relative to labor-intensive industries, because salaries rise faster than capital costs. (For example, from 1965 to 1975 the Consumer Price Index rose 69%; educational costs rose 155%) The initial expenditure on a huge machine and the interest

that is paid on the debt from buying the machine on credit and the repairs and the maintenance costs all are less expensive over time than people's salaries (in part, because machines continuously improve in efficiency).

Second, even small yearly reductions in budget cumulate to an enormous drain on fiscal resources fairly quickly. Right now, inflationary losses for many educational agents are running at well over fourteen percent per year, but revenues are growing at only around 7% per year: at least a 7% net loss. In 10 years, 7% loss per year will leave formal education with one-half the revenues (in real terms) it now has. Further, given the general economic woes society will probably be experiencing, we can be sure that education will not have first claim on social priorities in terms of funding—nor second, nor fifth.

Third, on top of this general economic drain, education will face spiraling resource costs—not just in energy, but in such items as water, paper, and transportation. Politics being what it is, in response to these increased costs we will see wildly changing and inconsistent policies from government. So far, the Federal response to the energy situation has been less than ideal, and in general that will continue to be true for all resource crises.

Finally, at the same time educators are facing economic woes because of the factors above—and because of dwindling enrollments due to demographic changes—we are also confronted by demands for "higher quality" education. We're supposed to train for jobs, screen for jobs, train for further schooling, screen for further schooling, socialize, entertain and babysit, keep students off the job market, prepare for citizenship, prepare for family life, and (in the remaining time available) create happy healthy human beings...on 7% per year less! The simultaneous intersection of all these trends will create very difficult times for formal education (especially public schools) and will

render solving any one of these problems that much harder.

With this background, a few examples of the implications for education of interactions among the future societal developments listed earlier are given below. (Futures researchers use a variety of methodologies to systematize the process of calculating interactions among events; for reasons of space, this intermediate reasoning has been omitted.)

Emergence of a Capital-Intensive Sector in Education

The financial squeeze higher education will experience, when coupled with two other factors, may provide the impetus for formation of a non-formal, geographically dispersed, capital-intensive system of instruction. One of these factors is the coming massive redefinition of job roles as microcomputers are used to make industries less labor-intensive as a way of coping with economic woes. The existing formal educational system is neither equipped nor cost-effective for the magnitude of adult retaining involved.

The second factor is the emergence of high quality instructional technology at a reasonable cost. Industries are already on the forefront of using these devices for teaching purposes because their efficiency and reduced staffing expenses create very high economic incentives. While the difficulties in evolving a whole new model of instruction, evaluation, and certification are substantial, the motivation for such innovation is now present. (Books did not suddenly become central when the printing press was developed; they were first widely used when an economic incentive appeared.)

Such a non-formal instructional technology system, once established for adult retraining, might quickly expand its influence because of easy add-on capabilities. For example, parents who could afford to do so would supplement their children's schooling using system software packages, and

eventually might lobby to substitute these cheaper methods for the training portion of K-12 education. Within 15 years, through such expansions, a capital-intensive system might rival the labor-intensive system in importance. The unanswered equity and practice questions of such a new educational model are numerous and troubling.

"Disparate, But Equal" Education

The roles which formal education plays in different types of communities may become quite disparate by the 1990s. Communities with a large percentage of two-wage families will expect schools to provide much higher levels of supervision and socialization than areas with predominance of one-income households. In metropolitan areas, demographic concentration of minority groups and immigrants (many non-English speaking) will create a set of educational needs quite different from those of suburban, upper-income areas. Schools (mostly private) that convert quickly to capital-intensive instructional approaches will have a very different classroom environment than the traditional, as will schools which respond to pressures for a meritocratic, high-powered system of gifted/talented education to train an elite capable of reversing America's problems.

High population mobility will ensure the need to smooth transitions among these diverse environments. Moreover, the uniformly high degree of socialization requisite for functioning in a high technology society will require some degree of national standardization and coordination. Substantial challenges for educators will result from these emerging, diverging educational roles.

Retrenching Traditional Approaches

The financial constraints which trouble formal schooling in the 1980s may be augmented by several other major problems. "Here and now" concerns will become so dominant in society that planning and leadership will become very demanding roles in education, as multiple, continual crises drain time and resources. The strains which students experience in their lives will make maintenance of traditional academic standards very difficult. A pervasive sense of lack of control will cause disillusionment, apathy, and cynicism about the possibilities of perserving the current schooling system. Voucher systems and the franchises which develop in response will further complicate this situation.

National priorities and local mandates will continually be in conflict, posing grave problems for educational decision-makers. Demands for documented accountability and competence will badly reduce the ability of educators to accomplish their basic duties. The current dissensus on what the basic content of education should be will widen.

In short, the existing model for formal education will become almost unworkable. Education will be cited as an example of a crisis area in the struggle between those who feel the "materialistic American Dream" is still possible to reach and those who argue for a less technological, more human-centered society. The challenge for educators will be to shift from a reactive to a proactive reconstructionist position which chooses among the options in this struggle by taking a united, professional stand on the future of schooling. (My ideas on the stance educators should choose are set forward in The Far Side of the Future) Whether or not this challenge is met, the consequences for American society will be very large.

Jim Bowman tells a story about a frog. He claims that one can take a pot of water, put it on the stove without a lid, place a live frog in it, and boil the frog without ever covering the pot! The trick which keeps the frog cooking is that the heat underneath the pot is turned on just a little bit, so the temperature in the water goes up very, very slowly (perhaps a degree an hour). It gets hotter and hotter and hotter in the pot, but the frog never knows when to scream and jump out because the change is so gradual—so it boils! Educators can learn from this story because every year the water in our pot is that much closer to boiling: our budgets are smaller, we've cut things we needed to keep, we assume once more that the erosion of funds is going to stop, and we're about to get cooked!

We behave like the woman who had some cocker spaniel puppies with very long tails. She wanted to be stylish and have their tails short, but she wanted to spare them the pain of cutting off their tails all at once, so she cut off an inch every day! I feel that we're beginning to do that in education, primarily because we've been unwilling to accept that the whole fiscal tail really must come off. Paring the first 25% of our mid-1970s budgets and retaining our existing methods of instruction may have been possible (barely). The further cuts we now must make will mandate a radically different approach.

The Responses We Should Choose

What should we as a group of futures-oriented educators do, if we believe that these predictions for the next 10 years are fairly accurate? Certainly, the implications for our day-to-day activities are staggering. All of education is predicted on images of the future. Our budgets make assumptions about the economy; our research is tailored to the future contexts in which it is to be used; and, when we teach students, we have a vision of what they need to know given the world in which they will be growing up.

What does it mean for all our daily work if these fundamental notions about the future that underlie so much of what we do need to be altered?

When people aren't certain about what's going to happen, or when the future seems threatening to them, the natural response is to retreat into a psychological framework in which we say, "I don't know what's really going to happen, but the safest thing to assume is that at least some things will stay the same. These perennial issues are the areas in which I'm going to work; it's too risky to respond to a mere probability." So all of us spend our time wrestling with the eternal issues and problems. I think perennial concerns are crucial and should absorb 70% of our time, but 30% of what we do needs to be oriented toward resolving the uncertain future issues outlined above.

In practice, such a stance means that where we can see things "on the river" that differ from the present, we need deliberately and explicitly to change current decision making in budget, curriculum, and instruction. Where the future is indeterminant (and you'll notice that there are large areas of the future that I have not attempted to forecast because these are equivalent to a "dice game"), we need to have the courage to take a broad spectrum, "shotgun" approach in our educational strategies. For example, we don't know when microcomputer software will become useful in teaching reading. Such a breakthrough may be eight years away, or eighteen. But, if we are making plans that involve classrooms 10 years from now, we'd better ensure that our plans are flexible enough to incorporate the potential existence of microcomputer instruction. This may sound risky, but in fact it is the least speculative stance we can adopt: to acknowledge and prepare for legitimate

Given the conservatism that emerges during troubled times in education, being future-oriented in planning takes a certain degree of intellectual and professional fortitude. A parallel emotional courage is needed to look at an admittedly grim set of predictions and still believe that a positive future for education is attainable. While I know that the short-term situation is bleak and fraught with risk, I also feel the very difficulties that confront us also present real opportunities for change and growth. Educational systems are so resistant to innovation that ideological appeals seem to produce little long-term fundamental change. However, if times are bad enough, education will change out of monetary necessity, and we may be able to justify much-needed improvements in the name of stringency that we could never get otherwise.

For such a change strategy to succeed, we must anticipate the challenges that are coming and have ready pragmatic, field-tested, cost-effective innovations. Here the Education Section can play a major role in allowing us to interact among ourselves in devising such a set of models. If we work together to produce a "master plan" for low cost instruction, we may find educators suprisingly willing to adopt it simply because no other options are immediately available. We may be moving from a "river" to an "ocean" in terms of educational futures.

How might we evolve such a new model for instruction when we ourselves may become so pressed for money that even attending a yearly Education Section Conference becomes difficult? Hines and Gerlach have identified a low resources organizational structure wheich seems quite effective at promoting change: a segmented, poycephalous, ideological network /abbreviated SP(I)N/. SP(I)N organizations are composed of many autonomous, factional groups (hence are resistant to the cooptation, suppression, or immobilization tactics that

can be used effectively against large bureaucracies). The decentralization of SP(I)N associations ensures that they are always responsive to the needs of the membership and do not become overly dependent on a particular leader. Overlapping memberships in the factional groups which make up SP(I)Ns keep communication channels open. The ideological bond that members share provides the common motivation and purpose to keep the organization functioning.

The Education Section now has many characteristics of an SP(I)N groups. Should the economy become difficult enough, we could choose deliberately to evolve in this direction rather than toward a traditional professional association model. Similar social inventions to SP(I)N can be used, if we are creative and foresighted, to overcome the difficulties to organized innovation that a time of malaise presents.

I believe that the 1980s will be a grim period primarily because our society thought that it could get by with second-rate education for most citizens, that a high technology society could be run by a small group of experts and staffed by a large group of people with very little idea of how anything worked. This assumption was obviously wrong; a complex society requires that every citizen be as intelligent and creative as possible. The costs to our society of not educating one person—in terms of crime, welfare expenditures, and foregone productivity—are far higher than the direct costs of a good education from kindergarten through the doctoral level. For this reason, it is vital that we as educators become proactive rather than reactive in shaping education's relationship to the rest of society and in asserting that an essential part of the solution to our problems lies in a high priority for genuine educational change.

Two Closing Thoughts

Zymergy's Law of Evolving Systems Dynamics states that "if you open a can of worms, to recan the worms, a larger can is needed". Therefore, I assume that you have more questions now on the future of education than when you began this article.

Sergeant Preston's Law of the Wild states that "The Scenery Only Changes for the Lead Dog." Therefore, don't be alarmed at taking the lead with a futures perspective—the view is worth the trouble!